

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
WACO DIVISION**

SMART MOBILE TECHNOLOGIES LLC,

Plaintiff,

v.

APPLE INC.

Defendant.

SMART MOBILE TECHNOLOGIES LLC,

Plaintiff,

v.

SAMSUNG ELECTRONICS CO., LTD., and
SAMSUNG ELECTRONICS AMERICA,
INC.,

Defendants.

Case No. 6:21-cv-00603-ADA

Case No. 6:21-cv-00701-ADA

**DEFENDANTS' REPLY CLAIM CONSTRUCTION BRIEF
REGARDING THE '434 PATENT FAMILY**

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I. REPLY TO SMART MOBILE'S CLAIM CONSTRUCTION ARGUMENTS

Smart Mobile agrees that the preamble for claim 5 of the '291 patent is limiting. Defendants' brief thus focuses on the remaining terms from the '434 patent family below.

A. “system on a chip”¹ ('291)

The ordinary meaning of “system on a chip” requires a “system” that is contained on a chip. D46 at 4. SMT's construction focuses on the number of components included in the chip (whether all or most), which is irrelevant as to whether the chip contains a system.

Defendants explained why SMT's requirement of multiple components was both over and under inclusive. *Id.* at 5. SMT does not address that criticism. It offers a new construction, which adds the requirement of multiple functions being supported on the chip, but that construction is subject to the same criticism of being limited only by numerosity (and not if the chip is a “system”). This new construction also runs contrary to SMT's own dictionary definition, which defines a “system on a chip” in terms of its contribution to the system (“contribute to a functional computer system”) and not the number of components on the chip.

B. “is configured to” ('434)

SMT provided its proposed construction for the first time in its responsive claim construction brief. Defendants do not dispute this limitation could be satisfied by a particular hardware configuration and given SMT's acknowledgement that “actually” is understood to be a part of its construction, Defendants adopt SMT's proposed construction. In doing so, Defendants do not agree with SMT's argument as to what constitutes infringement under the proposed constructions, but such a determination is based on attributes of the accused product and irrelevant

¹ Similar to Defendants' brief for the '501 patent family, the disputed terms are in shorthand and can be found in the parties' initial briefs for the '434 patent family. See D46; D66, as filed in the Apple case. Emphasis added except where otherwise noted.

to the claim construction issue before the Court.

C. “wherein a [first] transmission interface is created . . .” (’653, ’946)

SMT fails to rebut Defendants’ four indefiniteness arguments. First, SMT’s citation to functional language in the claims cannot cure the fact that there is no clear delineation between the three “interfaces.” For example, SMT cites the “transmission interface” and “IP enabled interface” as exemplar functional descriptions that differentiate the interfaces, but fails to recognize that IP (i.e., Internet Protocol) is a form of communication, and as a result an “IP enabled interface” is a type of “transmission interface.” SMT’s citation to a “single interface comprised of multiplexed signals” injects more confusion, because Defendants’ principal argument—which SMT does not rebut—is that this phrase is *not* commonly understood to a POSITA, and therefore does not help distinguish one interface from another. SMT reinforces this point by asserting that an interface “comprised” of multiplexed signals means the interface “includes” multiplexed signals (D66 at 10)—but SMT simultaneously offers a construction of “interface” that refers to virtual or physical “connections” and *not* the signals sent over them. *Id.* at 9. Also unhelpful is SMT’s citation to passages using the verb “interfaced” (*id.*), which says nothing about what an “interface” is or what it means for a mobile device to “enable a single interface comprised of multiplexed signals.”

Second, it remains unclear how one interface would “use” another, as recited in the claims. SMT’s proffered explanation, that “a signal or data stream from the first (using) interface is sent through the second (used) interface” (D66 at 12), does not find any support in the patents themselves. And again, SMT’s explanations are contradictory, as SMT contends the “interface” is the sender or recipient of a signal but elsewhere argues that an interface “includes” signals—and elsewhere defines “interface” as a connection point.

Third, the “which utilize” clause still cannot be reconciled with its surrounding claim language. SMT’s interpretation of the “which utilize” clause into the claim (color coded below)

results in (1) a “first interface” that uses a “plurality of interfaces”; and (2) the “plurality of interfaces” use “transmit and receive units” to provide a “single interface”:

wherein said first interface for transmission uses a plurality of interfaces

for Internet Protocol communication on the mobile device which [plurality of IP enabled interfaces] utilize the plurality of wireless transmit and receive units on the mobile device to enable a single interface . . .

SMT disputes that the “single interface” is comprised of the “transmit and receive units” (in blue) but that is evident from the claim itself, which refers to the “transmit and receive units . . . *enabl[ing] a single interface.*” SMT does not otherwise explain the meaning of this language.

Fourth, SMT fails to resolve the problem that there are multiple ways to interpret “single.” Defendants offered two ways to interpret “single” in this term. D46 at 13. SMT criticizes both, but fails to provide any justification for this criticism. Indeed, SMT’s solution appears to be simply reading the word “single” out of the claim. D66 at 13-14. This type of re-write is improper. *Nazomi Communs., Inc. v. ARM Holdings, PLC*, 403 F.3d 1364, 1368 (Fed. Cir. 2005) (“[C]ourts should not rewrite claims to preserve validity.”). This term is indefinite.

D. “wherein . . . using one or more antennas simultaneously” (’653, ’946)

The term is indefinite because the word “simultaneously” cannot be reconciled with the surrounding claim language. SMT implicitly acknowledges this problem because it asks the Court to change it to “using one antenna, or multiple antennas simultaneously.” D66 at 14. But the Court cannot rewrite claims where there is “reasonable debate” about what the claims mean. *Novo Indus., L.P. v. Micro Molds Corp.*, 350 F.3d 1348, 1357 (Fed. Cir. 2003). Here, the claim language could reasonably be interpreted to refer to simultaneous communications using multiple antennas, using multiple transmit and receive components simultaneously, or sending and receiving data simultaneously. Each of these options is plausible based on the literal language of the claim. But none is clearly correct, because each would be inconsistent with surrounding claim language and

the patent provides no guidance. D46 at 13-15.

SMT fails to explain why its rewrite is more appropriate than rewriting the claim in some other way (e.g., to address other plausible but also contradictory interpretations of the clause in Defendants' brief). The specification only confirms the ambiguity in the claim as it also refers to using multiple transmit and receive components simultaneously and sending and receiving simultaneously—making each interpretation equally plausible. '653 patent, Abstract (referring to “simultaneous[]” use of “multiple T/R units”); 6:26-29 (similar). The term is indefinite.

E. “USB communication” ('291, '946)

SMT agrees that a claim term should be interpreted as of the patent's filing date, but argues that “USB communication” should not be interpreted as the USB technology at use in 1999.² However, the case that is directly on point—*Fundamental Innovation Sys. Int'l LLC v. Samsung Elecs. Co.*—makes clear that “USB” in a claim refers to a known standard, and should be limited to the standard in existence as of the filing date.

SMT makes three counter-arguments based in caselaw, and each is unavailing. First, SMT distinguishes *Fundamental* by claiming that SMT's patents use “generic” references to USB. D66 at 17. This does not alter the fact that “USB” was a well-established technology standard in 1999, and SMT does not show that the patentees were referring to anything *but* the USB standard.

Second, SMT argues that *Uniloc* helps SMT's position because the court in that case allowed the construction to cover features from Bluetooth 1.1 “that remain in later versions” of the standard. D66 at 18. This argument misses Defendants' point: *Uniloc* demonstrates that “USB” cannot be construed to cover functionality (e.g., USB-C) that did not exist at patent filing.

Third, the authority SMT relies upon does not support its argument. For example, SMT

² SMT accuses devices using newer versions of USB such as USB-C.

cites several cases where the terms in dispute were not a known standard like USB, and therefore have limited applicability here. *SuperGuide Corp. v. DirectTV Enter., Inc.*, 358 F.3d 870 (construing “regularly received television signal”); *Soverain Software LLC v. Amazon.com, Inc.*, No. 6:04-CV-14, 2005 WL 6225276, at *5 (E.D. Tex. Apr. 7, 2005) (construing “hypertext transfer protocol,” which only existed in “draft” form at the relevant time). Other cases have been taken out of context by SMT, such as *Celltrace*, where the construed term (“GSM-compatible”) appeared only in the preamble (as opposed to appearing in a structural term like in SMT’s patents) and “[t]he primary dispute between the parties [was] the interpretation of ‘compatible,’” which made it harder to determine whether the specific standard applied. *Celltrace LLC v. AT&T Inc.*, No. 6:09CV294 LED-JDL, 2011 WL 738927, at 1, 15-16 (E.D. Tex. Feb. 23, 2011). Finally, SMT cites a case, *Cellspin Soft*, where the dispute in question was whether to limit “Bluetooth” to any particular version of the standard, but here Defendants do not seek to limit the term to a specific version number, but rather the USB technology that was known at the time of the patent filing. *Cellspin Soft, Inc. v. Fitbit, Inc.*, No. 17-CV-05928-YGR, 2021 WL 1417419, at *10 (N.D. Cal. Apr. 14, 2021) (“Bluetooth has a well-understood meaning at present *independent* of any version”).

Thus, a POSITA would have understood the patent’s references to “USB communication” to mean USB technology at use at the time of filing, as an invention cannot comply with standards not yet in existence. *Fundamental Innovation*, 2018 WL 647734, at *9.

F. “dynamically” (’434)

SMT attempts to define this term by reference to the specification’s discussion of software that dynamically determines factors for “best” data transfer. D66 at 20. However, none of these factors relate to switching antennas, which means the patent does not explain what it means to “dynamically” switch between a first and second antenna, thereby rendering the term indefinite. As to the extrinsic evidence, SMT’s cherry-picked dictionary definitions shed no light on the issue,

and SMT’s introduction of the vague term “need” in its proposed construction only serves to further confuse the meaning of this term.

G. “ports” (’653, ’863, ’291, ’946, ’083, ’075)

SMT fails to identify a single disclosure of “a virtual … point of connection through which information may be transferred,” because none exist. *See* D66 at 21-25. Instead, SMT relies on the flawed premise that wireless communication units require “virtual ports.” *Id.* at 23. SMT ignores that, even in the case of wireless communications, the wireless transmit/receive component is a physical device that transmits over a physical medium (*i.e.*, the air). Beyond these conclusory statements, SMT fails to prove that a wireless connection requires a software-based “virtual port” (it does not). Defendants’ construction correctly captures the plain meaning of “ports,” in light of the intrinsic evidence, as “a jack or socket that a cable connector plugs into.” D46 at 17-22.

Disclaimer is not necessary to adopt Defendants’ (correct) construction, because the intrinsic record is replete with examples confirming Defendants’ hardware “ports” construction. D46 at 17-22. The specification expressly teaches using physical cable connectors to enable both wired and wireless communications. *Id.* For example, plugging a device into a cradle adapter enables wireless communications: “[t]he enabling attachment can make any *non-wireless device* (NWD) unit 613 *wireless enabled while being plugged into the cradle adapter 604*, as shown for CT/MD 612, *to access a number of wired, optical or wireless communication paths through the ports 608.*” ’653 patent, 6:4-8 (emphasis added). Similarly, “[i]n FIG. 6, *a wireless device, CT/MD 602 with I/O ports 610 and CT/MD 612 with the ability to interface through a cradle adapter 604 having both wireless and wired connections 606 interfacing with multiple input/output (I/O) ports 608 is shown.*” *Id.* at 5:48-52 (emphasis added); *see also id.* at Fig. 6; D46 at 18-20. Thus, even for wireless communications, the patents teach physically connecting the claimed device to a cradle adapter, consistent with Defendants’ construction. “[T]he ordinary meaning of

a claim term is its meaning to the ordinary artisan after reading the entire patent.”” *Eon Corp. IP Holdings v. Silver Spring Networks*, 815 F.3d 1314, 1320 (Fed. Cir. 2016) (citation omitted). Here, the intrinsic evidence clearly supports Defendants’ position.³

SMT has failed to identify any disclosure in the intrinsic record of a mobile device with a wireless transmit/receive unit that lacks physical connections, for example, to a cradle adapter. *See* D66 at 21-25. And regardless, a POSITA would understand that such a device would require an antenna—a hardware component plugged into the device—to enable wireless communication, consistent with Defendants’ construction. *See also id.* at 21 (“all of the claims at issue recite ‘a plurality of ports’ that are a part of a wireless or handheld device that includes wireless communication units/components and *antennas*.”) (emphasis added).

The specification contains no disclosures of virtual (*i.e.*, software-based) ports, let alone that virtual ports are needed to enable wireless communication. SMT labors to argue, for example, that claims 27 and 28 of the ’653 patent “require[] a plurality of virtual ports” for communication over wireless network paths (D66 at 22). But claim 28 only requires that “the mobile device is configured to receive multiple IP data packets on a plurality of ports,” and says nothing of “virtual” ports. Further, as discussed above, wireless communication requires the use of hardware devices operating over a physical medium; wireless does not in and of itself require “virtual ports,” and SMT has failed to prove otherwise. SMT attempts to backfill this lack of intrinsic evidence with a conclusory statement from its expert: “in 1999 and 2000 (as today), wireless ports were typically implemented via a virtual port.” *Id.* But neither SMT nor its expert cite *any* evidence that “wireless

³ SMT’s proposal also attempts to encompass any “virtual … point of connection” within a device, including even in software, and with no bounds to the phrase “point of connection.” But this is contrary to the context of the specification that makes clear the “ports” are physical input/output connections to the device. *See, e.g.*, D46 at 19.

port” was a term of art or that wireless communication was “typically implemented via virtual port”—the Court should ignore this conclusory extrinsic evidence.

SMT would construe “ports” and “interface” almost identically by including “virtual... point[s] of connection.” This is an apparent attempt to cover software Application Programming Interfaces (“APIs”) in the accused products. But neither APIs nor “virtual ports” are found in the intrinsic record. Furthermore, SMT and its expert fail to demonstrate that a “virtual... point of connection” is consistent with a “virtual port” in the art, or how a “virtual port” would support SMT’s construction. SMT has also failed to explain how a “point of connection” can be “virtual” at all. SMT’s constructions improperly attempt to expand SMT’s infringement allegations.

Regardless, even if a POSITA would have known about “virtual ports” at the time of the invention (which SMT has failed to prove), SMT’s proposal would still render the claims invalid for lack of written description and enablement. *See D46 at 22.* “[O]ne cannot ‘bootstrap’ the knowledge of a person of ordinary skill in the art (‘POSITA’) into the [written description] analysis and fill the gap in the disclosure through obviousness,” as SMT attempts to do here. *In re Katz Interactive Call Processing Pat. Litig.*, 639 F.3d 1303, 1320 (Fed. Cir. 2011). SMT has not identified any disclosures in the patent that demonstrate that the patentees possessed the concept of “a virtual ... point of connection through which information may be transferred” in the context of the claimed invention. Likewise, SMT has failed to identify where the patents teach how to use “virtual ports” in the context of the claimed invention, so SMT’s construction would also render the claims invalid for lack of written description and enablement. *See D46 at 22; Phillips v. AWH Corp.*, 415 F.3d 1303, 1327 (Fed. Cir. 2005); *Trustees of Bos. Univ. v. Everlight Elecs. Co.*, 896 F.3d 1357, 1365 (Fed. Cir. 2018). SMT’s construction should thus be rejected.

H. “application” (’434, ’653, ’863, ’291, ’946)

Defendants accept SMT’s construction as it applies to ’168 claims 5, 19, 22; ’434 claim 2;

'653 claims 10, 11, 17; '863 claims 6, 12; '291 claim 12; and '946 claims 6, 10, 11. The remaining dispute is whether "application" means "use, role or task" in some '501 family claims. As explained in the concurrently filed '501 brief, some claims require "application" to be construed as "use, role or task" because otherwise they do not fit into the claim language.

I. "one or more subtasks are assigned to one or more channels" ('943)

SMT argues that this phrase needs no further construction. D66 at 26. However, SMT's overbroad infringement contentions make construction necessary. *See* D46 at 28.

Instead, SMT opposes Defendants' construction as "import[ing] numerous limitations from the '943 and '789 Patent specifications." D66 at 26. However, the three purported "limitations" identified by SMT are not actually limitations. The first—the "channel" term—is discussed below, and is the appropriate interpretation in light of the intrinsic and extrinsic evidence. *See* Section I.J. The second and third—"dedicated" and "pre-defined"—reflect the '943 specification and the specification of the '789 priority patent. *See* D48-18 (Ex. 18), '789 patent, 14:25-38 ("It is also possible to define and dedicate certain channels for various pre-defined or programmable tasks only."), 16:66-17:15 (describing the "dedicated" channels of "the multichannel multiplexing transmitter/receiver"). Thus, Defendants' proposal comports with the well-established proposition that the claims *must* "be read in view of the specification." *Phillips*, 415 F.3d at 1312-13 (Fed. Cir. 2005) (internal quotes and cites omitted).

SMT asks the Court to disregard the specification for no other reason than the patents' boilerplate language about embodiments being for purposes of illustration only. SMT has no basis for its unreasonably overbroad application of this term.⁴

⁴ Regarding "subtasks," SMT confusingly argues that "it is '*data relating to* tasks and subtasks' that is sent via communication channels, as opposed to the subtasks themselves." D66 at 27. This statement aligns with Defendants' position that the '943 specification states that "data

J. “channel” (’943, ’083)

The ’083 and ’943 patents use “channel” consistent with the ordinary meaning proposed by Defendants, i.e., as a communication path between a transmitter and a receiver. Relevant treatises and dictionaries support this definition. *See* D46 at 29 (citing Exs. 47 and 48). SMT would graft “processing channels” onto this term, and attempts to co-opt the first definition (Ex. 48) for this purpose by claiming it is “so broad … that it supports [SMT]’s construction.” D66 at 28. This is wrong, however, because SMT’s construction—unlike The Communications Handbook (Ex. 48) definition—adds a “processing channel” concept and does not require a “receiver.” SMT also dismisses The Electrical Engineering Handbook (Ex. 47) and its definition of a “communication channel” as “beside the point” (D66 at 27-28), which is incorrect because the claims here are directed to *communication* devices. *See, e.g.*, ’943 patent, claims 1, 5, 8, and 12 (reciting “a wireless communication device”). SMT acknowledges as much for the ’083 patent, and relies on this communication capability for the “ports” term. D66 at 21.

To support its construction, SMT purports to provide a “more pertinent” definition of “channel” from The Microsoft Computer Dictionary, excerpted below. D66 at 28.

channel *n.* 1. A path or link through which information passes between two devices. A channel can be either internal or external to a microcomputer. *See also bus.* 2. In communications, a medium for transferring information. Depending on its type, a communications channel can carry information (data, sound, and/or video) in either analog or digital form. A communications channel can be a physical link, such as the cable connecting two stations in a network, or it can consist of some electromagnetic transmission on one or more frequencies within a bandwidth in the electromagnetic spectrum, as in radio and television, or in optical, microwave, or voice-grade communication. *Also called circuit, line.*

relating to tasks or subtasks are assigned or allocated to the different communication paths.” D46 at 25. Thus, SMT appears to have inadvertently agreed to Defendants’ position.

D68-6, Ex. 1006 at 81. SMT’s construction, however, deviates from these allegedly “pertinent” definitions. For example, SMT includes information paths or links “within” a device and within or between “components,” which the dictionary definitions do not support.

SMT argues that the dictionary excerpt above allegedly “defines the term to cover both internal (processing) and external channels as well as communication channels” (D66 at 28), but this is wrong for two reasons. First, neither definition refers to internal “processing” channels. The first definition states that a channel can be “internal or external to a microcomputer,” but a microcomputer—*i.e.*, a stand-alone computer like a PC⁵—can have either internal or external transmitters and receivers (and associated channels). The patents confirm this in Figure 2, which shows computers (202, 204) communicating via transmit/receive (“T/R”) components that may be “located within or in proximity to” each computer, *i.e.*, internally or externally. ’943 patent, 3:35-48; ’083 patent, 3:35-48. The “parallel paths” between the T/R components are the channels. Thus, the definition aligns with Defendants’ proposal.

Second, SMT ignores that its “pertinent” dictionary includes a definition of “channel” in the context of “communications” (Ex. 1006), and that the definition supports Defendants’ proposal. The patents describe a channel as a path like a cable or fibre optic channel (D46 at 31), which echoes the definition in Ex. 1006 (“a physical link, such as the cable connecting two stations in a network”) and aligns with Defendants’ proposal.

SMT also argues that the ’083 claims use “channel” to refer to processing channels (D66 at 28⁶), but this cannot be correct. The claims say the device is configured “to process multiple

⁵ See Ex. 55, THE MICROSOFT COMPUTER DICTIONARY 289 (Fourth Ed. 1999) (stating that a “microcomputer” is “essentially, in today’s terms, a desktop PC”).

⁶ SMT’s suggestion that the ’083 patent claims’ reference to processing data or signal streams in parallel, including “via multiple channels,” also misrepresents the claims and specifications.

channels,” not to process *on* multiple channels. *See, e.g.*, ’083 patent, claim 1. Thus, the claims’ recitation of “process[ing] multiple channels” refers to channel *inputs*. This is consistent with Figure 6 of the priority ’789 patent, which discloses processor(s) that process data received from the channel *inputs*. *See* D46 at 31 (citing Ex. 18, ’789 patent, Fig. 6 (excerpt) and 13:24-26); *id.* at 27 (discussing the ’789 patent’s references to “input/output” or “input and output” channels). Similarly, the ’943 claim language reciting a processor that “comprises multiple channels” refers to having one or more channel inputs from which the processor receives “data streams” that are “process[ed] … in parallel.” ’943 patent, claim 1. SMT debates this reading (D66 at 28), but it is the only reasonable way to read the claims without re-writing them, as SMT’s ambiguous construction (with three “or’s”) would do.⁷

The specifications of the ’943 and ’083 patents compel the same result. SMT concedes the patent teaches communication channels, but alleges it also teaches “processing” channels by misrepresenting the specification. D66 at 29. For example, SMT quotes the ’083 patent abstract but omits the critical opening sentence: “[h]aving a single channel for a transmit/receive (T/R)

D66, 28. The claims separately refer to processing in parallel and the processing of multiple channels. The parallel processing is also done by the *device* or *system*, which would have been understood at the alleged invention date to be performed by multiple processors, not necessarily by a single processor having multiple channels *within* it as SMT suggests.

⁷ SMT argues that Defendant’s construction would render the ’083 claim 2’s recitation of “a single communication channel” superfluous. D66 at 29. This is incorrect, however, because claim 1 refers to “process[ing] multiple channels,” whereas claim 2 refers to the device “combin[ing] multiple paths into a single communication channel.” SMT does not explain how this would result in a clear redundancy, which is the same reason why the Federal Circuit rejected a similar position in *VirnetX*—the case cited by SMT as support for its position. D66 at 29 (citing *VirnetX Inc. v. Apple Inc.*, 792 Fed. Appx. 796, 811 (Fed. Cir. 2019); *see also VirnetX*, 792 Fed. Appx. at 812 (rejecting VirnetX’s “largely unelaborated argument” on the point of a redundancy resulting from a particular construction, and noting that “[i]n any event, in the circumstances of this case, we conclude, the bases for the claim construction we have set forth are so strong that the thin case for claim differentiation does not support a different result”).

unit with a single antenna or a single processor would cause a limitation in data transfer rates, so multiple channels are provided.” ’083 patent, Abstract. The described “channels” are communication channels to improve data *transfer*, and the processor merely has multiple channel *inputs* for information it can process in parallel. SMT’s other quotes fail for the same reason.

Defendants explained why the prosecution history supports their position (D46 at 31), and SMT’s counter-arguments fail due to overbreadth. SMT notes claim language relating to a “processor compris[ing] multiple channels” was used to distinguish and overcome the prior art identified by the examiner. D66 at 30.⁸ However, SMT’s proposed construction of “channel” would render that language meaningless as a point of distinction over any prior art, because every prior art processor inherently has “channels” according to SMT because they all pass information within them. In any event, such speculation is needless because the examiner confirmed their understanding of this claim language by pointing to prior art disclosing multiple transmit channels, not channels within a processor. D68-8, Ex. 1010 at SM0004544-45.

Finally, SMT mischaracterizes Defendants as requiring a physical communication path—this is not true. SMT’s language is wrong because it is overbroad, not because it fails to distinguish between physical and wireless paths. This overbreadth is illustrated by the fact that SMT’s construction would subsume other “information links” recited in the claims, even though the patentees used different words for such links (*e.g.*, the “paths” of ’943 claim 2, the “network path” of ’943 claim 4, and the “signal streams” of ’083 claim 11).

K. “the device is ... further configured with enhanced capabilities to differentiate between various signals or to combine multiple paths into a single communication channel” (’943)

The indefiniteness problem here is straightforward. The specification states that the

⁸ SMT’s reliance on this amendment and remarks also rings hollow because the applicant merely repeated the claim language, which sheds no additional light on the meaning of the term.

multiple antennas in claim 1 provide “enhanced capabilities” as compared to the prior art. ’943 patent, 4:7-11. Thus, when claim 2 recites the term of degree “enhanced capabilities,” it must mean something more than the capabilities associated with the “plurality of antennas” in claim 1, otherwise it would be redundant. *AK Steel Corp. v. Sollac & Ugine*, 344 F.3d 1234, 1242 (Fed. Cir. 2003) (“Under the doctrine of claim differentiation, dependent claims are presumed to be of narrower scope than the independent claims from which they depend.”). But there is no reasonable basis for determining the boundaries of what “enhanced capabilities” means, therefore claim 2 is indefinite. *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1364 (Fed. Cir. 2018) (“Our case law is clear that the objective boundaries requirement applies to terms of degree.”).

SMT demonstrates this indefiniteness by its replacement of the “enhanced capabilities” phrase with “at least two antennas, transmit/receive units and processors or processing channels.” First, this type of wholesale rewrite to save the claim’s validity is improper. *Nazomi Communs., Inc. v. ARM Holdings, PLC*, 403 F.3d 1364, 1368 (Fed. Cir. 2005) (“[C]ourts should not rewrite claims to preserve validity.”). Second, SMT merely proposes to graft the same elements onto claim 2 that are already recited in claim 1, *i.e.*, the antennas, transmitters, receivers, and processors.⁹ Adding “at least *two*” of these elements to claim 2 would not add any meaningful boundary to the claim because claim 1 already recites them as a “plurality” or as one or more.¹⁰

Finally, SMT replaces “a single communication channel” with “processing channels.” But

⁹ The exception is the “processing channels” element, which SMT adds without explaining its meaning or how it differs (if at all) from the disputed “channel” term.

¹⁰ SMT quotes language from the ’943 specification that mirrors almost exactly the language of *claim 1*, not claim 2, demonstrating that claim 1 already purports to provide “enhanced capabilities” relative to the prior art. Compare D66 at 33 (quoting ’943 patent, 4:24-31) (“the single processor may have multiple channels for parallel processing of each data stream to process accurately two distinct signals 408...”) with ’943 patent, claim 1 (“the processor comprises multiple ones of the one or more channels and is further configured to process a first data stream and a second data stream in parallel”).

SMT argues elsewhere that a “processing channel” is *distinct* from a communication channel. *See* Section I.J. SMT’s improper rewrite of the claim should be rejected.

L. “interface” (’653, ’836, ’946)

SMT attempts to construe “interface” without reference to the intrinsic evidence, arguing that “in 1999 (as today) [‘interface’] was understood to include software or virtual interfaces,” and that it is therefore “undisputed that the ordinary meaning of ‘interface’ … includes virtual interfaces.” D66 at 34. This is incorrect on multiple counts. First, the parties do dispute whether “interface” in the patents here includes virtual interfaces. Second, the correct inquiry is not what a POSITA might have generally known, but rather what meaning a POSITA would ascribe to the term “interface” when read in the context of the asserted ’653, ’863 and ’946 patents. *Phillips*, 415 F.3d at 1312 (“The best source for understanding a technical term is the specification from which it arose”) (citation omitted). Dictionary definitions—which SMT relies upon heavily—cannot be used to contradict the unambiguous intrinsic record. *Phillips*, 415 F.3d at 1324. The intrinsic record does not disclose “a virtual … point of connection between software,” and thus does not support SMT’s broadening construction. Defendants’ construction correctly reflects the “ordinary meaning” of “interface” in view of the intrinsic record and should be adopted.

1. SMT’s construction would render the claims invalid for lack of written description and/or failure to enable the claims.

Defendants explained that the intrinsic record discloses only physical points of connection between hardware elements, and never virtual connections between software elements. D46 at 33-36. Not only would a POSITA understand the term “interface” to *not* include virtual connections, but SMT’s construction would render the claims invalid for lack of written description and/or failure to enable the claims. *Id.* at 37. In response, SMT cites fragments of the intrinsic record, which SMT asserts “suggest” “virtual interfaces” (D66 at 34-39), but these passages do not

actually disclose “a virtual … point of connection between software” and so they do not support SMT’s position. SMT also cites several claims in the ’653, ’946, and ’863 patents, and argues that these claims “constitute part of the specification” and provide written description support for “virtual interfaces.” D66 at 34-36. The claims, however, were filed over fifteen years after the asserted 1999 priority date,¹¹ and if SMT asserts that claims filed in 2014 and 2015 “satisfy the written description requirement” (*id.* at 36) then SMT cannot also claim priority to 1999 for those same claims. *See, e.g., Agilent Techs., Inc. v. Affymetrix, Inc.*, 567 F.3d 1366, 1383 (Fed. Cir. 2009) (“If not supported in the parent application, fundamental fairness requires that claims to new matter receive, at best, the filing date of the continuing application.”). SMT fails to identify any portion of the ’789 patent specification (to which the ’653, ’946, and ’863 patents claim priority) to prove that “virtual interfaces” find support in the 1999 application.

Furthermore, even if SMT’s identified claims are considered “part of the specification,” they still do not “convey[] to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date,” and therefore lack written description support. *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010). The Federal Circuit has explained that “[t]he purpose of the written description requirement is to prevent an applicant from later asserting that he invented that which he did not; the applicant for a patent is therefore required to ‘recount his invention in such detail that his future claims can be determined to be encompassed within his original creation.’” *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003) (citing *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1561 (Fed. Cir. 1991)) (emphasis added). SMT attempts to do precisely this—expand the claimed invention to cover

¹¹ The ’653 patent was filed September 23, 2014, the ’863 patent was filed March 17, 2015, and the ’946 patent was filed April 28, 2015.

“virtual interfaces” that were not encompassed in the alleged priority application in 1999.

SMT cites one disclosure in the ’789 patent application filed in 1999 in support of its construction, but this does not support its virtual “interface” construction. *See* D66 at 38 (arguing that the ’789 patent’s statement that “each of the input/output channels could be hardwired designed or software programmable to interface with various types of input/output data communications lines” is an “indicat[ion] that the interface is virtualized”). The disclosed “input/output data communications lines” are a physical, shared electrical boundary between two hardware devices. The ’789 patent does not teach a “software programmable interface” as SMT suggests; it discloses “software programmable to interface” with hardware communication lines. At best, this generic statement can only be interpreted to mean software programmed “to interface” (a verb) with communication lines, *e.g.*, software transmitting data via the physical input/output data communication line. It does not teach “a virtual … point of connection between software.”

Finally, SMT’s construction would also render the claims invalid for failure to enable virtual points of connection between software elements. SMT has not identified any portion of the specification that would enable a POSITA at the alleged time of the invention to create “virtual interfaces” that constitute “a virtual … point of connection between software.” SMT’s attempt to expand the ordinary meaning of “interface” to include later-developed technologies while asserting a priority date of 1999 is precisely the sort of gamesmanship that the patent law’s written description and enablement requirements seek to counteract. SMT’s construction must be rejected.

2. SMT’s remaining citations fail to disclose “a virtual … point of connection between software.”

SMT cites a handful of other disclosures in the ’653, ’946, and ’863 patents that purportedly disclose “virtual interfaces.” D66 at 36-38. SMT once again argues that wireless transmit/receive units somehow necessitate virtual interfaces. *Id.* at 36-37. For the same reasons described above

with respect to the “ports” term, SMT has failed to prove that a wireless communication unit requires a “virtual interface.” *See* Section I.G, *supra*. SMT further contends that data streams “interfaced separately with Server C 1030 or combined into data stream 1028 and interfaced to Server C 1030” would require “a virtual interface (such as an API).” D66 at 36-37. SMT relies only on a conclusory statement from its expert to support this argument and cites no intrinsic evidence. *Id.* But as Defendants explained, “interfacing” involves transferring data on a physical connection between a mobile device and “Server C”—two hardware devices—and both disclosures state that the optional step of combining data streams precedes “interfacing.” D46 at 36. Neither disclosure demonstrates that the inventors possessed the concept of “a virtual … point of connection between software.” Likewise, the patents do not provide written description for “a virtual interface (such as an API),” or teach a POSITA how to combine data streams, let alone how to use “a virtual … point of connection between software” to do so.

SMT’s remaining examples suffer from the same flaws. SMT cites a “web server function” discussed in the specification (D66 at 37), but this citation only discusses physical connections between the mobile device and external server C; there is no discussion of any “virtual … point of connection between software.” *See* ’653 patent, 10:27-31. SMT summarily concludes that the “web server” disclosure teaches “software interfaces between applications,” relying only on its expert’s conclusory opinion (D66 at 37), but the text cited in the specification makes zero mention of “software interfaces between applications.” This is purely attorney argument. Similarly, SMT argues that two other disclosures in the specification might “suggest” “virtual interfaces”: “the software capability … is capable of dynamically determining a number of factors for best data transfer” (D66 at 37) and “‘user defined menu driven software’ for ‘signal path selection’” (*id.* at 38). Here, too, SMT relies only on its expert’s conclusory opinion and cites no supporting

evidence. Neither of these disclose “a virtual … point of connection between software.” At best, the two citations describe software optimizing data transfer over a physical interface, or software selecting a physical interface—not “a virtual … point of connection between software,” as SMT asserts. SMT’s construction finds no intrinsic support and should be rejected.

M. “multiplex / multiplexes / multiplexed / multiplexing” (’653, ’083, ’075, ’943, ’946, ’291)

Defendants’ construction is the ordinary meaning of “multiplex,” which is “to interleave or simultaneously transmit two or more messages on a single communications channel.” D46 at 37-41. The inverse of multiplexing, which SMT would include within its definition, is splitting a received signal into multiple signals, a process commonly referred to as *demultiplexing*. *See, e.g.*, Ex. 56 (Demultiplex (DEMUX) Definition, <https://www.techopedia.com/definition/24123/demultiplex-demux>) (Oct. 11, 2022) (“Demultiplex (DEMUX) is the reverse of the multiplex (MUX) process [D]emultiplex is reconverting a signal containing multiple analog or digital signal streams back into the original separate and unrelated signals.”).¹² SMT never suggests that its construction is the ordinary meaning of “multiplex,” nor does SMT show that the patentees intentionally deviated from the ordinary meaning. This is fatal to SMT’s proposal here, because SMT must establish a “clear intent” by the patentee to deviate from the term’s ordinary meaning. *See, e.g.*, *Thorner v. Sony Comput. Ent. Am. LLC*, 669 F.3d 1362, 1365–66 (Fed. Cir. 2012) (“It is not enough for a patentee to simply disclose a single embodiment or use a word in the same manner in all embodiments, the patentee must ‘clearly express an intent’ to redefine the term.”).

SMT’s arguments for including “split[ting] a single signal stream” in this term’s definition are based on neither the ordinary meaning of the term “multiplexed,” nor any express disclosure

¹² SMT’s “significant” figure from the ’739 Application is consistent with this understanding, where multiplexing is the interleaving of messages for transmission (device output), and demultiplexing is the splitting of those messages at the receiver (device input). D66 at 43.

in the patent. D66 at 40-44. At best, the patent uses these well-understood terms ambiguously (if not incorrectly), but in all events the cited examples do not rise to the level of lexicography. *Thorner*, 669 F.3d at 1365–66. SMT also cannot rely on the unsupported opinion of its expert to backfill the lack of intrinsic disclosures; this would undermine the public notice function of patents and the duty of the patentee to achieve clarity in their claims. To the extent the intrinsic record suggests the claims could be interpreted to refer to what is commonly called “demultiplexing,” such a conclusion is not clear on its face, and would require the Court to rewrite the claim.

Furthermore, SMT’s focus on whether “multiplex” can include “a single signal stream” split “into multiple signal streams” (D66 at 40-45) ignores the crux of the dispute—whether the scope of “multiplexing” also includes combining or splitting “*data streams*” independent from physical communication channels. Such a construction would cover “virtual interfaces” and software-based Application Programming Interfaces (APIs) that were not disclosed or enabled by the patentees. As Defendants explained, the intrinsic record does not disclose that “multiplexing” includes combining (or splitting) *data streams* into a single (or multiple) *data streams* independent of communication channels, as SMT advances in its construction. D46 at 39. The specification is clear that each “*data stream*” has a corresponding channel, T/R unit, and processor—components required for communication over physical channels. ’653 patent, 7:21-30. Every instance of “multiplex[ing]” in the asserted patents, including those identified by SMT, is in the context of transmitting or receiving signals over physical communications channels. *See* D66 at 40-45.

SMT argues that various disclosures “suggest[]” “splitting the data stream into parallel paths … and recombining the parallel paths into a single data stream” (D66 at 40-41), but this is pure conjecture; there are no such express disclosures. Contrary to SMT’s argument, requiring

that “the data transfer rate be ‘improved’ by the use of parallel paths” does not disclose or enable “splitting [a] data stream into parallel paths.” *Id.* Indeed, the asserted patents teach transmitting disparate but related data streams on parallel paths—such as “video, audio and other uses … optimized for each through dedicated or multiplexed antenna paths” (’653 patent, 18-21)—and not splitting a single data stream across parallel paths, as SMT urges. Furthermore, the asserted patents do not provide written description for or enable “combin[ing] multiple … data streams … into a single … data stream for transmission or further processing” or “split[ting] a single … data stream … into multiple … data streams for transmission or further processing,” separate from physical communication channels, as a form of “multiplexing.” *See D46 at 39.* For example, the patents do not describe how a “data stream” could be split or combined. The patents are silent regarding how various data packets in two or more different “data streams” can be combined into a single “data stream,” or how the data packets in a single “data stream” can be separated into two or more disparate “data streams.”¹³ SMT’s construction would thus render the claims invalid for lack of written description or enablement.

The Court should decline to deviate from the customary meaning of “multiplex” to include concepts and technologies that were not disclosed or enabled by the patentee, and should therefore adopt Defendants’ construction. Finally, SMT does not dispute that the preamble of claim 1 of the ’075 patent is limiting, and the Court should find accordingly. *See D66 at 40-45.*

II. CONCLUSION

For at least the foregoing reasons, Defendants respectfully request the Court construe the disputed terms as proposed by Defendants.

¹³ To be certain, the patents also fail to disclose and enable how data packets on multiple physical communication channels can be combined into a single communication channel or vice-versa, but this is an invalidity issue Defendants will address at the appropriate stage in the case.

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Respectfully Submitted

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CERTIFICATE OF SERVICE

I hereby certify that all counsel of record who have consented to electronic service are being served with a copy of this document via the Court's CM/ECF on October 12, 2022. Any other counsel of record will be served by e-mail on this same date.

/s/ Aamir A. Kazi

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